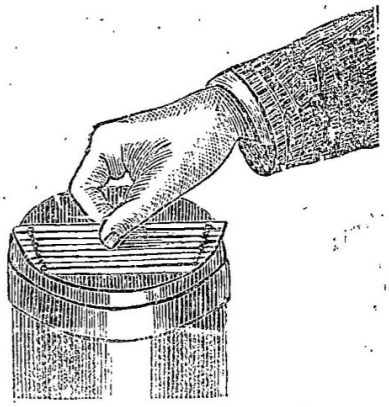
METEOROLOGICAL DEPARTMENT, GOVERNMENT OF INDIA.

RAINFALL CIRCULAR No. 5 OF 1891.

Instructions for use of Measuring Gauges.

On one side of the gauge for measuring the funnels of rain-gauges parallel lines of different lengths are drawn. The length of the middle line is exactly five inches, and this is shown by the mark 5″ at its ends. The others increase or diminish by 0·2 inch, and the lengths of the various lines are 4·94, 4·96, 4·98, 5, 5·02, 5·04, and 5·06 inches respectively. Except in the case of the middle line the last figure only is marked, so that 4·9 or 5·0 has to be supplied for the shorter or longer lines.



When using the gauge take hold of it in the middle by the thumb and first finger as shown in the above woodcut, and place it in the funnel of the rain-gauge with the longer side up, and the lines as nearly horizontal as possible. Should it then coincide with a diameter of the funnel, the length of this diameter will be indicated by the figures at the end of the line on the face of the measuring gauge joining the points where it touches the edge of the funnel. If this line be the middle one, the diameter of the funnel is five inches, but if the mouth be larger than it ought to be, the measuring gauge will go further down, say, till the next line above the middle one fits the mouth of the funnel. In this case its diameter will be 5·2 inches. If the mouth be less than 5,″ the lower lines (of 4·98 inches, 4·96 inches, or 4·94 inches) will enable the length of the diameter to be measured, and if more than five inches the higher lines (of 5·02, 5·04 and 5·06 inches) will enable the diameter to be gauged.

It is not likely that the diameter will be exactly the length of one of the lines drawn on the face of the measuring gauge, but sufficient accuracy will be obtained if the length be given correct to one hundredth of an inch. This may be easily done by observing whether the line joining the points of contract of the measuring gauge with the edge of the funnel coincides most nearly with one of the lines on the measuring instrument or with a line midway between two of the lines traced on the measuring gauge.

Care should be taken that the measuring gauge is not forced into the mouth of the funnel, but placed in it with the ends of the gauge lightly touching the edge at equal distance from the middle line. If this be attended to the lines on the face of the measuring gauge will be horizontal, and the diameter of the funnel may be measured correct to even less than a hundredth of an inch.

To test whether or not the measuring gauge lies along a diameter of the funnel, keep one end fixed and try if the other can be moved to the one side or the other. When this is no longer possible, the diameter has been found.

When the instrument is used to test a rain-gauge, it is employed to determine—

1. Whether the mouth of the funnel is truly circular.
2. Whether the circle is of the proper diameter.

In order to test if the instrument is truly circular or not, measurements should be made in different directions across the mouth of the funnel. If these agree within the hundredth of an inch, the rim may be accepted as circular. If not, the measurement of the greatest and least diameters or distance across the rim should be given, in order to enable, if desired, a correction to be applied to the actual measurements of rainfall to allow for the error due to the change of shapes of the rim.

If the mouth of the rain-gauge is found to be circular, the measurement of the diameter should be taken as carefully and exactly as possible, so as to be certainly correct within a hundredth of an inch, which is the limit of error adopted by the Meteorological Department for rain-gauges in actual use. If the error exceeds this, the instrument should be replaced as soon as convenient by a new instrument.